

Claims

1. A process of making a fuel or chemical from a biomass hydrolyzate comprising the steps of:

5 (a) providing a biomass hydrolyzate;

 (b) adjusting pH of the hydrolyzate;

 (c) contacting a metal oxide, having an affinity for guaiacyl or syringyl functional groups or both, and the hydrolyzate for a time sufficient to form an adsorption complex;

 (d) removing the complex wherein a dissolved sugar fraction is provided; and

 (e) converting the sugar into a fuel or chemical using a microorganism.

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2. The process of claim 1 wherein the metal oxide is selected from the group consisting of titanium dioxide, vanadium oxide, and zirconium oxide.

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3. The process of claim 1 wherein the adsorbed complex comprises a compound consisting essentially of lignin-derived phenol compounds.

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4. The process of claim 1 wherein the pH is adjusted in the range of 6.0 to 9.2.

5. The process of claim 1 further comprising, after adjusting, heating the hydrolyzate to a temperature in the range of 80°C to 100°C.

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6. The process of claim 1 wherein the microorganisms are selected from the group consisting of *r. Zymomonas mobilis*, *Saccharomyces cerevisiae D_sA*, or *Lactobacillus rhamnosus*.

7. The process of claim 3 wherein the metal oxide comprises titanium oxide, the titanium oxide concentration being twice a phenol concentration of the hydrolyzate.

8. The process of claim 3 wherein the hydrolyzate is a softwood and the metal oxide concentration is four times a phenol content of the hydrolyzate.
9. The process of claim 4 wherein the dissolved sugar fraction includes less than one mg/mL of lignin-derived compounds.
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10. A fermentable medium comprising the undiluted sugar fraction of claim 1.